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Health claims using the term “sustained energy” are trending, but glycaemic response data are being used to support: Without context, is this misleading?

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Today, more than ever, food companies allocate significant funding toward nutrition research with the aim to discover novel health benefits for their products and ingredients. In some instances, it is hopeful that the investment in research will culminate the appropriate levels of evidence to permit the use of a health claim on foods that contain ingredients that facilitate a health benefit. As with any consumer-facing industry, the food industry's research focus can be heavily guided by consumer trends. Hence, it is logical that investments in clinical trials that investigate the healthful properties of functional foods can be driven by market trends and fads. One of the most recent food trends is the quest for products that provide "sustained energy;" a vague and ambiguous term that is garnering considerable attention within the marketplace. Often, "sustained energy" health claims are based on a food's post-prandial glycaemic response. In some cases, the time period for which energy is "sustained" will accompany the claim. However, are generalized health claims regarding "sustained energy" valid when only supported by glycaemic response data? Without context, the short answer is – probably not.

The purpose of assigning a health claim to a food product is, first and foremost, to communicate the clear health benefit of a food, nutrient or non-nutritive ingredient to the consumer. After all, for foods with claims that appeal to a specific consumer demographic, purchase intent will, in part, be dictated by the healthful properties of the food. A key benefit to a company with product lines that are accompanied by an approved health claims is the potential for an in-market advantage over similar foods (manufactured by a competitor) within the same food category.

To properly address the use of "sustained energy" health claims, the term "sustained energy" needs to be appropriately classified under a specific category of health claim. Typically, health

claims communicate a specific health benefit fall under two categories. The first, are “function-type” health claims where the contribution of a food, nutrient or bioactive, to normal biological function is identified. In some jurisdictions, such as Canada, Australia, and the United States ^{(1;}
^{2; 3)} the use of “function” health claims can be used without pre-market approval, as long as companies making the claim on labels and advertising house the appropriate scientific evidence to support claim. The second type of health claim is disease reduction, or therapeutic, health claims where the effect(s) of a food, nutrient, or bioactive on reducing disease risk or risk factors are communicated to the consumer. Disease reduction/therapeutic health claims typically require approval prior to their use on a food label.^(2; 3; 4) Within most jurisdictions, there are laws and regulations in place that are meant prevent the use of false or misleading health claims. In the EU, regulations specifically indicate that claims are permitted so long as the average consumer is able to understand the beneficial effects that are communicated.⁽⁵⁾ Furthermore, it should be noted that, for Europe, all food-related health claims, regardless of being functional or therapeutic in scope, are vetted through the European Food and Safety Association prior to approval by European Commission.^(6; 7)

On its own the glycaemic response partly describes the physiological functions associated with post-prandial metabolism, therefore, a “sustained energy” claim based on glycaemic response would not be a therapeutic health claim. Given that the underlying health claim that is the topic of this discussion refers to an energetic effect, which is related to the biological response to the food, the classification “sustained energy” as a function health claim would likely be appropriate.

The overarching issue with the abovementioned health claim is defining what “energy” means to the average consumer, where, under the context of the food, the individual that ingests the food is left to develop their own interpretation of “sustained energy.” From a scientific perspective, energy is generated and consumed through metabolic pathways, defined by laws of thermodynamics and can be quantified by purpose-led experiments that provide context around the observed effect. Good examples are studies that measure the effects of dietary constituents on the energetic aspects of exercise performance, such as peripheral and central fatigue. The former can be function of the availability of high-energy phosphates from ATP and the latter is neurological in nature. Under specific conditions, such as exercise, observed improvements in peripheral and/or central fatigue from a dietary intervention would provide supportive quantitative data for sustained energy. However, there are no studies, which have demonstrated that an individual can blindly perceive the amount of energy contained in a food product or the rate at which energy is being generated and/or used in body. This is mainly because the physiological process of energy production for bodily function occurs at the cellular level. On packaging and in marketing material, standalone “sustained energy” claims are open to interpretation by the consumer and therefore, context for the claimed effect is crucial. In the previous example, the context for an “energy” claim would be physical activity and perhaps include verbiage that alludes to muscular or neurological performance. Of course, claim language would also be required to be user-friendly and properly interpreted by the consumer.

Without context, foods that equate “sustained energy” with low or propagated glycaemic response are communicating a health benefit that is not present. For example, as alluded to previously, long distance runners can perceive improvements in performance that could be

secondary to a reduced rate of carbohydrate absorption. Mechanistically, low glycaemic foods consumed prior or during exercise could be absorbed at a slower rate, provide a sustained source of carbohydrate energy and allow the athlete to perform at a higher intensity for a longer period of time.⁽⁸⁾ Conversely, under unexceptional circumstances, for a healthy individual that is at rest or performing typical day-to-day activities and has adequate fuel reserves from glycogen and adipose depots, it is unlikely the consumption of a low glycaemic food would facilitate a benefit that is perceived as sustained energy.

Claim wording, context and assumed extrapolation of concepts ensure that consumers do not misinterpret a health claims. It is obvious that a claim that communicates the provision of energy or “high in energy” is different from a health claim that communicates, “sustained energy.” However, commonly observed linkages between satiety or cognition with energy can leave room for confusion. Given a slower rate of carbohydrate absorption, it is reasonable that foods with a blunted or prolonged glycaemic response may facilitate feelings of satiety through various mechanisms of action.⁽⁹⁾ An effect on satiety may allow an individual to remain focused because feelings of hunger have been postponed. However, similar to the provision of energy, “sustained energy” and satiety are distinct concepts and should be communicated as such. Even if low glycaemic meals are shown to improve some aspects of cognitive function, which they have,⁽¹⁰⁾ this still does not equate with the implied meaning behind “sustained energy.”

Importantly, does the consumer link cognition with an energetic effect?

Energy drinks are a category of food that also makes use of health claims that communicate enhanced energy or performance. These claims are usually underpinned by the presence of

caffeine in the product. The difference between caffeinated foods and foods that use glycaemic response to reinforce sustained energy, is that caffeinated foods, such as energy drinks, usually give their claims context and focus on the stimulatory effects of caffeine on mental alertness and vitality; a known effect of caffeine that can be expected at rest and during exercise.

In some instances, the very nature of a communicated glycaemic response can be problematic for supporting corresponding claims that refer to sustained energy. Marketing of such products have, at times, have positioned post-prandial glycaemic curves on the packaging of some food products. This shows the consumer that science was used to help create the food they are about to eat. However, because the displayed glycaemic curve often misrepresents typical trajectory of glycaemic response, this too can be misleading. The glycaemic curves often show a blunted glucose spike shortly after consumption of a food, followed by an above baseline asymptotic response for the duration of the time period – indicating to the consumer that more energy is available for utilization for a longer period of time. However, depending on the individual, post-prandial glycaemic curves can be variable and differ in trajectory over the test period. Nevertheless, after the initial spike in glucose levels, rarely will a curve remain asymptotic for the duration of a glycaemic test. Instead, hormonal responses attempt to bring blood glucose levels back to baseline following the test meal, and therefore, blood glucose responses will most often continue on a gradual downward trajectory until baseline is reached. In fact, if glycaemic response were to remain above baseline for an extended period of time, one would expect the magnitude of the response to be increased. For some individuals, it is reasoned that a sustained post-prandial glycaemic response could perpetuate hyperglycaemia. Conceivably, under certain circumstances, “sustained energy release” would provide appropriate context. Even then, a slow

uptake of dietary glucose to the circulation does not necessarily translate into an increased flux in carbohydrate energy entering glycolysis and providing an energetic effect. Thus, the appropriate context for use would also need to be provided.

It is important to emphasize that a low and sustained glycaemic response can be distinct. For the latter, while the post-prandial peak glucose level can be relatively low, the magnitude of the response over the test period could be equivalent to foods whose available carbohydrate is absorbed quickly and rapidly return to baseline. Blunted post-prandial glycaemic response has been shown to be a positive characteristic of healthy diets. On its own, a health claim or even an indication that a food elicits a low glycaemic response could be of use to the consumer, especially for those with diabetes who are required to manage circulating blood sugar levels.⁽¹¹⁾ However, when used in conjunction with consumer-facing statements around energy, scientifically validated language regarding the expected effect of decreased or sustained glycaemic response on muscular or neurological performance, as well as how the food should be utilized, could serve as a starting point for permitting health claims that communicate “sustained energy.”

One way to circumvent the use of ambiguous sustained energy claims, as well as other claims that ineffectively communicate healthful messaging to consumers, is through consumer research. There has been considerable discussion on generating evidence around the consumer’s interpretation and dissemination of health claims;⁽¹²⁾ and recent studies demonstrate that consumers can be segregated based on their perceived attitudes toward functional foods, which in turn, modulates their ability to correctly interpret health claim messaging.^(13; 14) Under the

assumption that the food industry subjects new foods and corresponding marketing concepts to consumer testing, upstream research that also focuses on the consumer's understanding and interpretation of health claims could be helpful for synthesizing health claim messaging that provides the contextual information that mitigates confusion and misinterpretation. The information generated need not be made public, but could be submitted alongside claim dossier or, depending on the jurisdiction, provided to regulators in the event that a claim is challenged for being false or misleading. That being said, educational campaigns that coincide with product launches would also be helpful to not impede product innovation ⁽¹²⁾ and ensure that claim language strikes a balance between unambiguous communication and language that is consumer-friendly.

Finally, to mitigate further consumer confusion, harmonization of evidence required for health claims between food and dietary supplements should also be investigated. In some jurisdictions, such as Canada, standards of evidence for claims on natural health products have undergone considerable scrutiny.^(15; 16) Unfortunately, unlike the food industry, criticism in the supplement industry extends beyond the context provided in claim wording; and stems from concerns over lack efficacy to support reported claims and the absence of bioactive ingredients that are reported on ingredient lists. If harmonization of standards of evidence, as well as quality control, were harmonized, it is supposed that many of the outstanding regulatory issues that provoke criticism of the supplement industry could be adequately addressed.

201 Given that many jurisdictions are facing soaring healthcare costs, governments and regulatory
202 agencies often support the use of health claims as a means for directing consumers to foods that
203 improve dietary quality and delay, decrease or eliminate the need for formal medical care.
204 Therefore, the purpose of this commentary is not discourage industry-funded research that
205 support the substantiation of health claims, but rather to encourage less ambiguity in the
206 application of these claims and to bolster claims with application of appropriate data. There are
207 many examples where industry-funded research has made substantial contributions to nutritional
208 science; and such investments are by no means negative or imply the presence of bias. In
209 addition, it is important to keep in mind that health claims represent an important tool for
210 communicating the presence of healthful ingredients in foods within the marketplace. Under the
211 appropriate regulatory guidance, evidence to support health claims can “good” science that is
212 systematically reviewed to ensure a food imposes the communicated health benefit.

213
214 In today’s climate of nutritional discovery, specific food products may very well give rise to a
215 sustained energetic effect that will be experienced broadly and under most circumstances. Until
216 then, health claims that link sustained energy to glycaemic response, or any other attribute of a
217 food or diet, require context to ensure the public correctly interprets and experiences the claimed
218 effect; and is not misled in their quest for healthy foods that impose the desired physiological
219 benefit.

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